

WHAT IS CLAIMED IS:

1. A method of treating apoptosis comprising administering to a subject in need thereof a pharmaceutically effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.

2. The method of claim 1, wherein the zinc ionophore comprises zinc pyrithione, heterocyclic amines, dithiocarbamates and Vitamins.

3. The method of claim 2, wherein the zinc ionophore is zinc pyrithione.

4. The method of claim 2, wherein said heterocyclic amine comprises 5,7-Diiodo-8-hydroxyquinoline and 8-Hydroxyquinoline.

5. The method of claim 2, wherein said dithiocarbamate comprises pyrrolidine dithiocarbamate, zinc-diethyldithiocarbamate, disulfiram and zinc-dimethyldithiocarbamate.

6. The method of claim 2, wherein said vitamin is selected from the group consisting of Vitamin E and Vitamin A.

7. The method of claim 1, wherein the effective amount of a zinc ionophore ranges from about 0.005 µg per kg of body weight to about 5.0 mg per kg of body weight.

8. The method of claim 7, wherein the effective amount of a zinc ionophore ranges from about 0.2µg per kg of body weight to about 600µg per kg of body weight.

9. The method of claim 1, wherein the zinc ionophore is administered intravenously, intramuscularly, subcutaneously, intracerebroventricularly, orally or topically.

10. A method of treating the harmful effects of injurious agents selected from the group consisting of oxidants, $\text{TNF}\alpha$, neurotoxins, and radiation comprising administering to a subject in need of such protection an effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.

11. The method of claim 10, wherein the zinc ionophore comprises zinc pyrithione, heterocyclic amines, dithiocarbamates and Vitamins.

12. The method of claim 11, wherein the zinc ionophore is zinc pyrithione.

13. The method of claim 11, wherein said heterocyclic amine comprises 5,7-Diiodo-8-hydroxyquinoline and 8-Hydroxyquinoline.

14. The method of claim 11, wherein said dithiocarbamate comprises pyrrolidine dithiocarbamate, zinc-diethyldithiocarbamate, disulfiram and zinc-dimethyldithiocarbamate.

15. The method of claim 11, wherein said vitamin is selected from the group consisting of Vitamin E and Vitamin A.

16. The method of claim 10, wherein the effective amount of a zinc ionophore ranges from about 0.005 μg per kg of body weight to about 5.0 mg per kg of body weight.

17. The method of claim 16, wherein the effective amount of a zinc ionophore ranges from about 0.2 μg per kg of body weight to about 600 μg per kg of body weight.

18. The method of claim 10, wherein the zinc ionophore is administered intravenously, intramuscularly, subcutaneously, intracerebroventricularly, orally or topically.

19. A pharmaceutical composition comprising a zinc ionophore and a pharmaceutically acceptable carrier.

20. A method of treating ischemia comprising administering to a subject in need thereof an effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.

21. The method of claim 20, wherein the zinc ionophore comprises zinc pyrithione, heterocyclic amines, dithiocarbamates and Vitamins.

22. The method of claim 21, wherein the zinc ionophore is zinc pyrithione.

23. The method of claim 21, wherein said heterocyclic amine comprises of 5,7-Diiodo-8-hydroxyquinoline and 8-Hydroxyquinoline.

24. The method of claim 21, wherein said dithiocarbamate comprises of pyrrolidine dithiocarbamate, zinc-diethyldithiocarbamate, disulfiram and zinc-dimethyldithiocarbamate.

25. The method of claim 21, wherein said vitamin is selected from the group consisting of Vitamin E and Vitamin A.

26. The method of claim 20, wherein the effective amount of a zinc ionophore ranges from about 0.005 µg per kg of body weight to about 5.0 mg per kg of body weight.

27. The method of claim 26, wherein the effective amount of a zinc ionophore ranges from about 0.2µg per kg of body weight to about 600µg per kg of body weight.

28. A method of treating seizures comprising administering to a subject in need of thereof an effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.

29. The method of claim 28, wherein the zinc ionophore comprises of zinc pyrithione, heterocyclic amines, dithiocarbamates and Vitamins.

30. The method of claim 29, wherein the zinc ionophore is zinc pyrithione.

31. The method of claim 29, wherein said heterocyclic amine comprises 5,7-Diiodo-8-hydroxyquinoline and 8-Hydroxyquinoline.

32. The method of claim 29, wherein said dithiocarbamate comprises pyrrolidine dithiocarbamate, zinc-diethyldithiocarbamate, disulfiram and zinc-dimethyldithiocarbamate.

33. The method of claim 29, wherein said vitamin is selected from the group consisting of Vitamin E and Vitamin A.

34. The method of claim 28, wherein the effective amount of a zinc ionophore ranges from about 0.005 μg per kg of body weight to about 5.0 mg per kg of body weight.

35. The method of claim 24, wherein the effective amount of a zinc ionophore ranges from about 0.2 μg per kg of body weight to about 600 μg per kg of body weight.

36. A method of treating conditions caused by apoptosis comprising administering to a subject in need thereof an effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.

37. The method of claim 36, wherein the zinc ionophore comprises zinc pyrithione, heterocyclic amines, dithiocarbamates and Vitamins.

38. The method of claim 37, wherein the zinc ionophore is zinc pyrithione.

39. The method of claim 37, wherein said heterocyclic amine is selected from the group consisting of 5,7-Diiodo-8-hydroxyquinoline and 8-Hydroxyquinoline.

40. The method of claim 37, wherein said dithiocarbamate is selected from the group consisting of pyrrolidine dithiocarbamate, zinc-diethyldithiocarbamate, disulfiram and zinc-dimethyldithiocarbamate.

41. The method of claim 37, wherein said vitamin is selected from the group consisting of Vitamin E and Vitamin A.

42. The method of claim 36, wherein the effective amount of a zinc ionophore ranges from about 0.005 µg per kg of body weight to about 5.0 mg per kg of body weight.

43. The method of claim 32, wherein the effective amount of a zinc ionophore ranges from about 0.2µg per kg of body weight to about 600µg per kg of body weight.

44. An anti-epileptic composition comprising a zinc ionophore and a pharmaceutically acceptable carrier.

45. A method of preventing seizures comprising administering to a subject in need thereof an effective amount of a zinc ionophore and a pharmaceutically acceptable carrier.